

Application/Control Number: 10/621,046

Page 2

Art Unit: 2800

CImpto

031506

PY

Art Unit: 2800

Listing of the Claims:

Claim 1 (currently amended): A method for producing a structure on a substrate comprising the steps of ~~depositing drops of a suspension of nanoparticles of a material in a liquid by means of a droplet generator, melting the nanoparticles of the deposited drops at least partially by exposition to laser light and solidifying the molten nanoparticles for forming the structure.~~

a) depositing drops of a suspension onto a substrate,
wherein said suspension comprises nanoparticles of
a material suspended in a liquid; and,
wherein said substrate lacks recesses in the
region where said drops are deposited onto said substrate;
and,

b) exposing said nanoparticles on said substrate to at
least one localized spot of laser light such that said
nanoparticles are at least partially melted by said at least
one localized spot of laser light; and,

c) solidifying said at least partially melted
nanoparticles, forming thereby said structure on said
substrate.

Art Unit: 2800

Claim 2 (currently amended): The method of claim 1 further comprising the steps of
directing the said at least one localized spot of
laser light to a at least one curing point on the said
substrate and
translating the said at least one curing point in
respect to the over said substrate.

Claim 3 (currently amended): The method of claim 1 further comprising the steps of
depositing the said drops at a drop-off point on
said substrate and
translating the said drop-off point in with
respect to the said substrate.

Claim 4 (currently amended): The method of claim 1 further comprising the steps of
directing the said at least one localized spot of
laser light to a curing point on the said substrate,
depositing the said drops at a drop-off point on
said substrate, and
translating the said curing point and the said
drop-off point in respect to the over said substrate.

Claim 5 (currently amended): The method of claim 4 wherein the said curing point and the said drop-off point coincide.

Claim 6 (currently amended): The method of claim 4 wherein the said curing point and the said drop-off point are
located at a distance from each other.

Claim 7 (currently amended): The method of claim 1 further
comprising the step of generating the said drops by
compressing a volume of the said suspension and thereby

Art Unit: 2800

squirting ~~the said~~ drops through an opening onto ~~the said~~ substrate.

Claim 8 (currently amended): The method of claim 1 wherein ~~the said~~ liquid is selected from the group comprising consisting of toluene, terpineol, xylene, and water and mixtures thereof.

Claim 9 (currently amended): The method of claim 1 wherein ~~an~~ the exponential absorption coefficient of the said at least one localized spot of laser light in the said suspension is at least approximately 0.1 μm^{-1} , in particular at least 1 μm^{-1} .

Claim 10 (currently amended): The method of claim 1 wherein ~~the said~~ suspension is deposited as a layer on ~~the said~~ substrate and wherein at least 80% of ~~the said at least one~~ localized spot of laser light is absorbed in the said layer.

Claim 11 (currently amended): The method of claim 1 wherein ~~the said~~ nanoparticles ~~are of a~~ comprise at least one metal.

Claim 12 (currently amended): The method of claim 1 wherein ~~the said~~ liquid comprises toluene and ~~the said~~ nanoparticles comprise gold.

Claim 13 (currently amended): The method of claim 1 wherein ~~an average diameter of the size of said nanoparticles is~~ sufficiently small for reducing a that the melting point of the said nanoparticles is substantially below a bulk the melting point of the bulk material comprising said nanoparticles.

Art Unit: 2800

Claim 14 (currently amended): The method of claim 1 wherein an average diameter of ~~the said~~ nanoparticles is less than approximately 100 nm, in particular less than 10 nm, preferably between 1 nm and 5 nm.

Claim 15 (currently amended): The method of claim 1 wherein ~~the said~~ structure is a superconductor.

Claim 16 (currently amended): The method of claim 12 wherein an intensity distribution of ~~the one or more of said at~~ least one localized spot of laser light at the said curing point is non-Gaussian.

Claim 17 (currently amended): The method of claim 12 wherein an intensity distribution of ~~the one or more of said at~~ least one localized spot of laser light at the said curing point has at least two spatially separated maxima.

Claim 18 (currently amended): The method of claim 12 ~~comprising the step of depositing wherein~~ said drops are deposited along a line strip on said substrate, wherein an intensity distribution of the said at least one localized spot of laser light at the said curing point has a local minimum on a center line of said line strip.

Claim 19 (currently amended): The method of claim 12 ~~comprising the steps of~~ depositing wherein said drops are deposited along a line strip on said substrate, wherein said exposing of said nanoparticles comprises directing at least two laser beams onto said substrate at said curing point, such that said laser beams impinging-impinge on opposite sides of a center line of said line strip.

Art Unit: 2800

Claim 20 (currently amended): The method of claim 1 ~~comprising the step of repetitively pulsing said laser light wherein said at least one localized spot of laser light is pulsed.~~

Claim 21 (currently amended): The method of claim 1 further comprising immediately following step (a), the step of
a) evaporating at least part of said liquid, after
~~depositing said drops and before bringing said nanoparticles into contact with said laser light.~~

Claim 22 (currently amended): The method of claim 1 further
comprising the step of heating said substrate by a means
separate from said laser light.

Claim 23 (currently amended): The method of claim 1 wherein
said substrate is transparent ~~for~~ to said laser light.

Claim 24 (currently amended): The method of claim 1 further
comprising the step of generating, above or below said
structure, a structured-polymer layer by
depositing drops of a polymerizable liquid, and
polymerizing said drops of deposited polymerizable
liquid.

Claim 25 (original): The method of claim 24, wherein said
drops of deposited polymerizable liquid are polymerized
using UV radiation.

Art Unit: 2800

Claim 35 (new): The method of claim 9 wherein said exponential absorption coefficient of said at least one localized spot of laser light in said suspension is at least approximately $1 \mu\text{m}^{-1}$.

Claim 36 (new): The method of claim 14 wherein said average diameter of said nanoparticles is less than approximately 10 nm.

Claim 37 (new): The method of claim 36 wherein said average diameter of said nanoparticles is in the range from approximately 1 nm to approximately 5 nm.

Claim 38 (new): A method for making a capacitor comprising:

- a) depositing a first electrically conductive structure on an insulating substrate as in claim 1; and,
- b) depositing a dielectric structure on said conductive structure as in claim 24; and,
- c) depositing a second electrically conductive structure on said dielectric structure as in claim 1 such that said first conductive structure and said second conductive structure surround said dielectric structure forming thereby a capacitor.

Claim 39 (new): A method for crossing a first electrical conductor and a second electrical conductor on an insulating substrate while maintaining electrical isolation between said first and second electrical conductors, comprising:

- a) depositing a first electrically conductive structure on an insulating substrate as in claim 1; and,
- b) depositing an insulating structure on said conductive structure as in claim 24; and,
- c) depositing a second electrically conductive structure on said insulating structure as in claim 1 such that said first conductive structure and said second conductive structure are separated by said insulating structure and maintain electrical isolation thereby.